

# FOX VALLEY ELECTRIC AUTO ASSOCIATION NEWSLETTER FOR MAY , 2002

**NEXT MEETING: Friday, May 17 at 7:30 PM in the Triton INDUSTRIAL CAREERS  
BUILDING (East Campus), Room 108**

**DISCUSSION TOPICS: 1 Update on the Summer seminar. 2. August 21st Elmhurst Car Show. 3. Status  
of conversions in-progress. 4. Open Topics**

## MEMBERSHIP INFORMATION

Any person interested in electric cars is welcome to join the FVEAA. The cost for a full year's dues is \$ 20 which will entitle members to receive our monthly Newsletter that contains useful information about electric car conversions, construction, news, policies, and events. Membership is not required to attend our meetings. Dues for NEW members joining in June will be \$ 10.

To obtain info about the FVEAA you may contact either Past-President Ken Woods or President Shafer

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## PRESEZ

There is a feature usually included in the newsletter that is missing this month. "From Other EV Newsletters....". In its place is a copy of the final report on the Triton *Ranger* Project that fills 8 pages. Five double-sided pages is a gram or two under the 1-ounce postal limit for a 34-cent stamp. I'll catch up in the next issue.

Triton has agreed to waive the auditorium usual rental charge in favor of a 50-50 split of the net proceeds from the \$ 5 entry fee charge. A full house will double their rental revenue. The rest will go into the FVEAA treasury to sustain our activities. They have also agreed to help us find a sponsor willing to pay for advertising the event. It now looks like an early August date.

Member Woodie Bessler pointed out at the last meeting out that Elmhurst has a weekly car show that each session features a theme. It seems that the August 21 date for custom modified cars is a category fitting our converted vehicles. I will ask Woodie to arrange for opportunity charging at the Fifth Third Bank parking lot where theme cars are parked. Exhibit hours are 6-9PM. We will discuss attending this event.

There are seven members with conversions in progress. There will be a discussion of their status and help with problems they may have.

We will conclude with open topics.

BILL

## MINUTES OF THE APRIL 15 MEETING

The meeting at Triton was called to order at 7:34 PM. Seventeen members and two guests attended. Guest Dave Lewis from Byron joined the FVEAA.

Treasurer Dale Corel reported that we have \$2863.59 in the checking account and \$2709.50 in the savings account. Bank signature cars need to be updated following the death of former Treasurer Vana.

Secretary Moore moved and Member Steve Grushas seconded the motion that Director John Emde, President William Shafer and Treasurer Dale Corel become the authorized signatories on our checking and savings accounts. Also that we revised the transaction status from two persons “and”, to one person “or”. The motion was unanimously approved.

Member Todd Dore has removed the engine from his donor car. Paul Harris reported his rusty saga with Mazda RX-7 donor cars is over. Both vehicles will be junked. He now has a 1996 Nissan MX-6 as his new donor car. Paul was asked how he could keep his car from rusting in the future i.e. waxing the car. John Emde and others mentioned that it is the underside of the car that is the concern of rust, and it was suggested to wash the bottom of the car during salt season and not to park the car on gravel or other moisture rich areas.

President Shafer reported the Legislation authorizing the Alternative Fuel Rebates expires on June 30 and suggested that converters have their rebate request paperwork filed with the State EPA before that date. The current State budget crunch doesn't help matters.

The summer seminar at Triton was discussed. A date has yet to be set. Most members preferred September or October. Bill is continuing to work on the seminar at Triton.

Members Bessler, Emde and Grushas reported on the dates of summer car shows in their suburbs and the need to advertise the seminar through these venues. Cool Cars Under the Stars (Wednesday nights in Elmhurst 7-9 PM), T evenings in Westmont, and Friday evenings in Downers Grove. FVEAA handouts are available and we could also distribute seminar information.

President Shafer reported that Triton's final decision on the Green Machine is to dismantle the vehicle and sell the parts for half price. The major difficulties are the vehicle is restricted to campus use and displays since it cannot be licensed. George Glavic was interested in the parts since he plans to convert a pickup truck.

The two guests were invited to share their interests in EVs with the group. Dave Lewis, who drove in from Byron has a Dodge Colt as a donor vehicle. Robert Friedman, an electrical engineer, is very interested in renewable energy.

The meeting was recessed to the auto lab where Steve Grushas had his Escort on opportunity charge. There were many lively conversations. The meeting was adjourned at 10:15.

Submitted by  
Secretary Tim Moore

## REPORT ON THE TRITON PROJECT

### Background

The FVEAA has been holding its monthly meetings at Triton College since September of 1999. President, Dr. George Jorndt, suggested in the spring of 2000 that the FVEAA and Triton form a partnership to convert a vehicle to electric power as an educational trial course. He noted the FVEAA could benefit by recruitment of new members and Triton from the publicity expected. Both parties agreed to undertake the Project.

Triton agreed to provide shop facilities, furnish a 1996 Ford *Ranger* pickup truck for conversion, recruit community participants for the class (Appendix A), and fund the Project. The FVEAA committed to oversee the work (Appendix B). A May 19<sup>th</sup> starting date was established. Project details were contained in a February 9<sup>th</sup> letter to Mr. Ray Listina, who was designated by Dr. Jorndt as Triton's representative.

A work schedule for the class was established. A class was held each Saturday from 10AM-2PM. One hour was allowed for class work and three for shop work. The project required 30 weeks. Seven community participants recruited by Triton were awarded 2 ½ classroom credit hours for course completion.

Dr. Jorndt retired as Triton President and Mr. Tom Menzel, Associate Dean of Alternative Learning, was selected to be Triton's Project Representative. FVEAA President Shafer, was the FVEAA Project Manager. Ray Oviyach, retired Instructor of Automotive Technology at Triton and FVEAA Member, was the Triton Project Manager. FVEAA member John Emde was the Project Leader, responsible for all the design and supervising conversion work.

### Conversion Work

Eight handouts were distributed to the class during the process. These covered:

Project purpose. Triton rules for using facilities. Course general outline.

Conventional car principles of operation and fuel sources. Laws of Motion applicable to every car.

Reasons for electric vehicles (EVs). The importance of weight and weight distribution.

Fundamental principles of electricity as applied to EVs. Electrical components to be installed.

DC motors used for EVs.

Batteries used for EVs.

Battery charging principles.

DC controllers for speed regulation.

Conversion cost, EV economics, and work schedule.

The work accomplished each week is summarized in Appendix C. Appendix D shows Project Budget and Expenditures.

## **Discussion**

Triton and the FVEAA recognized there was uncertainty in this pioneering venture. This type of course has never before been offered in an Illinois Community College or elsewhere that we know about. The FVEAA agreed to provide class work as listed above based on 25 years of experience with EVs and experience gained by their members who have individually completed conversion of standard cars to electric power. The vehicle Triton provided for the Project had title restrictions.

The Ford Motor Company originally provided the vehicle for instructional purposes in Triton's noted Auto Technology program. When no longer used for this purpose Ford requires that Triton send the vehicle to a car crusher. This is enforced by never issuing Triton a vehicle title. While the conversion was certainly an instructional use of the vehicle its future use by Triton was restricted.

The FVEAA was certain of a successful vehicle conversion, but never before had encountered an automatic transmission in a conversion. The FVEAA recognized this and committed the organization to proceed, estimating there was an 80% chance it could successfully adapt this feature in a vehicle conversion.

The FVEAA enjoyed excellent cooperation of Triton Staff in purchasing, facility use, technical support, and management. Mr. Menzel promptly handled requests from the FVEAA Manager. This in spite of the unfamiliar nature of sophisticated and expensive electrical components used. There were a few delays that required rescheduling. The FVEAA appreciates the support of Triton personnel involved in the undertaking. The following statements of Ray Oviyach and John Emde also mention these.

## **Evaluation by the FVEAA Project Manager, Bill Shafer**

Only a few persons have electric vehicles as their hobby. In the Chicago area only one person in 100,000 has knowledge of the technology or an interest in undertaking a vehicle conversion. Automobile manufacturers have abandoned EV development in favor of hybrid vehicles. Today a conversion is about the only way today for an individual to acquire and use an EV. This Project offered an opportunity for the FVEAA to expand its membership base. It succeeded.

Early in the work, it became evident that only 3-4 persons could work on the vehicle at the same time. As a result there was more "standing-around" that I would have liked.

The Project initially was scheduled for twelve weeks. Appendix C shows it eventually required twenty-six sessions over thirty weeks. The project would not have been possible without the facilities Triton provided for the work.

The FVEAA benefited from the partnership. Appendix B. It shows FVEAA members contributed 868 man-hours of volunteer time for 21 persons. Seven of the 21 FVEAA participants became new members as a result of the program

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**FVEAA Project Manager's Analysis, Concluded**

Project expenditures were \$ 10,105. The usual conversion cost is \$ 8,000 but this project was more complex for several reasons. The donor vehicle was heavier than the usual passenger conversion and required more batteries. Optima batteries, about twice the cost as the usual flooded lead-acid batteries, were used for the project because they are sealed and maintenance free. This is an important consideration when the individual who does the conversion will not be responsible for future maintenance. Adaptations for the automatic transmission also entailed additional component costs.

**Evaluation by the Triton Project Manager, Ray Oviyach**

I have been associated with Triton College since 1968, retiring from the faculty in 1998. I have found Triton always committed to the mission of preparing people for work careers or higher degrees. The Continuing Education departments also exhibits a strong effort to provide value for the taxpayers and looking for new ways to serve the people in its community. The *Ranger* Project was an example of that commitment.

Former President Dr. George Jorndt suggested a partnership of the College and the FVEAA for an experimental course in the conversion of a standard vehicle to electric power. Triton offered use of the Auto Technology facilities, a 1996 Ranger pickup truck for the project and recruited students and adults, both in and out of the Triton District who were interested in learning about the elements making up an electric car. The participants recruited were enthusiastic and performed the work under the direction of the Project Leader, FVEAA Member, John Emde. As far as I know, no similar course is offered elsewhere.

Mr. Tom Menzel became the Triton representative for the project, working with the various staff members. Dean Mary Ann Olson of the Continuing Education Department, Kathy Kaspar of the Facilities Scheduling Office, Linda Recchio of the Purchasing Department, Roland Bossert of the Machine Technology Department, Dave Novotny of the Welding Department, all contributed. I wish to especially note the interest and valuable assistance of Auto Technology Department Instructors Messrs. Gabriel Murphy, Mike Gangi, Stu Sikora, and Mark Robinson. Without them the project would have been much more difficult.

**Evaluation by the Project Leader, John Emde**

Through the joint cooperation of the FVEAA and Triton College we procured some of the finest components available commercially for electric vehicle conversion. The donor vehicle, a 1996 Ford Ranger pickup with an automatic transmission was an excellent choice by Triton. There was adequate space for all conversion components and the final weight distribution was unchanged from its original front-rear split.

The conversion design relied on the FVEAA past experience with previous conversion projects. Many conversion parts had to be fabricated off-campus. A lot of time was required to cut and fit these parts. On several occasions it was necessary to tow the vehicle to a machine shop with the necessary tools.

Components were explained to the Triton participants at each working session. Each was given a job to install these on the donor vehicle. Usually three students were able to work at any one time while the others watched. This elicited many questions and answers from FVEAA participants. It was a valuable learning experience.

A future project of this type would need the cooperation of many Triton departments and personnel; auto shop, welding shop, engineering design, classroom instruction, purchasing, and community relations to name some. *A full-time, dedicated staff member must be in charge and a syllabus developed for any future project.*

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**Evaluation by the Project Leader, John Emde –Concluded**

The project was a success. FVEAA participants are not experienced teachers but are skilled in conversions of conventional cars to electric power. Half of the world's petroleum supplies have been consumed over the past 100 years and half of the remaining will be gone in the next 50. Electric vehicles will become more important in the future. Courses such as this experimental undertaking are just the beginning of an essential activity.

**Evaluation by Triton Participants**

Following project completion the participants were asked to comment on what they expected and what they got from the course. Most were drawn to the course by the announcement that appeared in the papers. They all indicated they learned a lot about electric cars but did not expect the design complexities. Several mentioned the process took a lot longer than they expected. One suggested an advanced class to learn more technical details about electric cars. Most thought that additional classroom time would be beneficial. All agreed the course should be offered again.

**Triton's Evaluation by Tom Menzel**

The Triton Electric Car Project was successful. An operating vehicle was built and Triton received publicity that enhanced our image as an innovative educational institution. . It is a tribute to vision of Dr. Jorndt that the Project was launched.

The Project Budget was \$10,600 and we received a \$4000 reimbursement from the EPA Alternative Fuels Reimbursement Program. We received \$528 from student tuition. We expect to recover another \$5000 for the conversion parts when the vehicle is dismantled, making our net cost \$677.

The effort was a good example of collaboration of Triton's Purchasing Department and Automotive Staff instructors who provided valuable assistance, particularly with the unique task of adapting the vehicle's automatic transmission to electric power. Facility Scheduling, Machine Technology, and Welding Shop personnel also participated.

The complexity of the conversion process makes it difficult to break even on a project such as this. We found that only four students could actively work on the vehicle at any one time and this produced inactivity for the rest. This is unacceptably restrictive as far as learning is concerned. We also found the course, as given, could not be compressed into a single semester.

It is Triton's assessment that the project met expectations and was valuable to participants. The project was an expense that Triton does not choose to repeat. Any future similar project will require the financial assistance from the State or private sources.

Finally, there are restrictions on the vehicle from Ford. It cannot be titled or licensed. It was meant to only be used for instructional purposes, which the conversion certainly was. Future use will be limited to on-campus activities and displays.

May 1, 2002

## TRITON PROJECT REPORT

### Appendix A, Participants recruited by Triton

Cal Christian, Elmhurst  
Jeremy Christian, Elmhurst  
Jim Dee, Park Ridge  
Michael Dee, Park Ridge  
Andrew Lencioni, Elmwood Park  
Brian Lambrecht, Elmwood Park  
Kevin MacKelvar, Forest Park

### Appendix B, Participating FVEAA Members (*Italicized Name*) indicates member joining during the Project

Name	Residence	# Sessions
Dale Corel	Elk Grove Villlage	5
Ray Deboth	Brookfield	23
<i>Todd Dore</i>	Brookfield	4
<i>Dan Capobianco</i>	Chicago	16
John Emde	Downers Grove	21
George Gladic	Skokie	14
<i>Steve Grushas</i>	LaGrange	16
<i>Howard Hanson</i>	Forest Park	5
Fred Kitch	Riverside	11
<i>Michael Johnson</i>	Franklin Park	7
Ted Lowe	Wheaton	8
Ed Meyer	Bolingbrook	6
<i>Tim Moore</i>	Hillside	10
Ray Oviyach	Oak Forest	19
<i>Nat Pozorski</i>	Forest Park	10
Paul Polster	Round Lake Park	1
Bill Shafer	River Forest	18
Ken Simmmermon	Lake Villa	12
Dan Wier	Tennessee	9
Ken Woods	Naperville	2
Kevin Zak	Lockport	2
Total		219

The 219 man-hours evaluated @ a conservative hourly rate of \$ 20/hour represents \$ 17,520 of volunteer work. Project Leader John Emde contributed \$ 5000 of his time in addition to his time spent at class sessions.

November 24, 2001

**TRITON PROJECT REPORT**  
**APPENDIX C**  
**Project Schedule**

Date	Task Scheduled	Week
May 19 *	Orientation – Baseline weights. Remove bed.	1
May 26	Remove engine & trans. Relocate rear shock absorber.	2
June 2	Auto physics, fuels, and electric motor tutorial. Design battery boxes	3
June 9	Dismantle dash assembly for heater core access.	4
June 16 *	Controller Tutorial. Preparatory tasks.	5
June 23	Session cancelled –Waiting for material delivery.	6
June 30	Motor Tutorial. Install two battery boxes underneath truck bed.	7
July 7	Battery Tutorial. Install rear battery box.	8
July 14	No class. Chicago Science Museum special exhibit and event.	9
July 21 *	Automatic transmission tutorial & design.	10
July 28	Schedule & Budget. Install front motor mount.	11
Aug. 4	Install heater core. Design hardware to convert truck bed for tilt-up.	12
Aug 11	Install two front battery boxes. Restore dash. Power steering pump.	13
Aug. 18 *	Install bed-tilt up hinge structure. Install power steering connection.	14
Aug. 25	Modify bed hinge. Install final battery box. Equipment shelf design.	15
Sept. 1	Labor Day weekend – No class	16
Sept. 8	Install equipment shelf. Charging plug and wiring.	17
Sept. 15	Fabricate battery box insulation. Miscellaneous tasks.	18
Sept 22	Install batteries, electrical components.	19
Sept 29	Install transmission cooler. Install power cabling, heater, & wiring.	20
Oct. 6	Install power brake pump, instruments and miscellaneous wiring.	21
Oct 13	Additional power and instrument wiring.	22
Oct 20 *	Clean-up items and test drive vehicle.	23
Oct 27	Test installation of battery charger and automatic transmission work.	24
Nov 3	Further consideration of automatic transmission options.	25
Nov 10	No class – Dana Mock’s memorial celebration.	26
Nov 17 *	Obtain final weight of converted vehicle.	27
Nov 24	No class – Thanksgiving Day weekend.	28
Dec 1	Install battery charger and transmission work, if required	29
Dec 8	Miscellaneous clean-up work. Final vehicle weight.	30
Dec 14	Test drive and performance evaluation. (Not a scheduled work session)	31

\* = FVEAA monthly meeting one hour before class started

Revised 12-15-2001

**TRITON PROJECT REPORT**  
**APPENDIX D**  
**Triton Project Budget and Expenditures**

Item	Vendor	Budget	Date	Estimated	Actual \$	Balance
Budget	-----	10,600	4/26/01	-----	-----	\$ 10,600
Service manuals	Helm		4/27	205	205	10,395
Motor & Adapter	Pioneer	2,200	5/7	2,200	2,300	8,095
Major components	KTA	3,000	6/4	3,250	3,052	5,043
Battery boxes	Speedmetal	800	6/6	800	710	4,333
Batteries & cable	Battery Serv.	3,000	6/18	3,000	2,981	1,352
Battery regulators		600		600	0	1,352
Controller Mod.	KTA	0	6/18	250	250	1,102
Charger	Corel	600		0	0	1,101
Misc. Items		200		600	607	495
Contingencies		200		0	0	
Totals		10,600		10,905	10,105	-

June 22, 2001

Updated August 13, 2001

Updated October 24, 2001

William H. Shafer

**TRITON PROJECT REPORT**  
**APPENDIX E**  
**Miscellaneous Material Purchased for the Triton Project**

The following table lists miscellaneous material that has been purchased for the Triton *Ranger Project* through October 24, 2001.

#	Description	Cost - \$	Use	Buyer
1	Zip Lock bags	\$ 3.59	Removed parts storage	O
2	Duplicate ignition key	5.02	Vehicle access	O
3	Tow bar	75.00	Maintenance tool	S
4	Cold-rolled steel	5.21	Part of tow bar	O
5	Flat steel	13.85	Mounting brackets	O
6	Safety glasses	27.31	Shop safety requirement	O
7	Angle iron	23.47	Mounting brackets	E
8	Fasteners (Bolts & nuts)	35.57	Mounting attachments	E
9	Hinges	19.53	Convert truck bed to tilt	E
10	Bed liner	30.13	Battery box liner	E
11	Electric cord and outlet fittings	40.82	AC circuit to battery charger from plug	G
12	Oil cooler	20.70	For automatic transmission	G
13	12-volt battery	20.68	Auxiliary electrical system	G
14	Struts	64.65	Tilt-up truck bed support	O
15	Battery wiring parts	131.76	Power battery connections	E
16	Foam insulation	12.77	Battery box insulation	E
17	Additional fasteners	45.73	Mounting attachments	E
18	Welding cable – additional 8 feet	13.52	Battery power connections	E
19	Pulleys & V-Belt	17.99	Power steering pump	E
20	Total	\$607.30		

E = Emde  
G = Grushas  
O = Oviyach  
S = Shafer